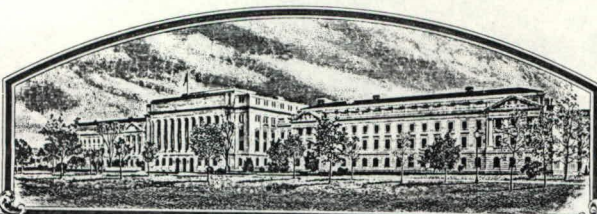


No.

8100037



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Northrup King Co.

Whereas, THERE HAS BEEN PRESENTED TO THE
Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF *eighteen* YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT (U.S.C. 342, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

RADISH

'Red Baron'



In Testimony Whereof, I have hereunto set
my hand and caused the seal of the Plant
Variety Protection Office to be affixed
at the City of Washington, D.C.
this 26th day of November in
the year of our Lord one thousand nine
hundred and eighty-two

Attest:
Kenneth H. Egan

Acting
Commissioner
Plant Variety Protection Office
Grain Division
Agricultural Marketing Service

John R. Block
Secretary of Agriculture

Handwritten text, possibly a signature or name, appearing in the upper left quadrant of the page.

1261

INSTRUCTIONS

GENERAL: Send an original copy of the application and exhibits, at least 2,500 viable seeds, and \$500 fee (\$250 filing fee and \$250 examination fee) to U.S. Dept. of Agriculture, Agricultural Marketing Service, Livestock, Poultry, Grain and Seed Division, Plant Variety Protection Office, National Agricultural Library Building, Beltsville, Maryland 20705. (See section 180.175 of the Regulations and Rules of Practice.) Retain one copy for your files. All items on the face of the form are self-explanatory unless noted below.

ITEM

- 5 Give the date the applicant determined that he had a new variety based on (1) the definition in section 41(a) of the Act and (2) the date a decision was made to increase the seed.
- 13a Give: (1) the genealogy, including public and commercial varieties, lines, or clones used, and the breeding method; (2) the details of subsequent stages of selection and multiplication; (3) the type and frequency of variants during reproduction and multiplication and state how these variants may be identified and (4) evidence of uniformity and stability.
- 13b Give a summary statement of the variety's novelty. Clearly state how this novel variety may be distinguished from all other varieties in the same crop. If the new variety most closely resembles one or a group of related varieties: (1) identify these varieties and state all differences objectively; (2) attach statistical data for characters expressed numerically and demonstrate that these differences are significant; and (3) submit, if helpful, seed and plant specimens or photographs of seed and plant comparisons clearly indicating novelty.
- 13c Fill in the Exhibit C, Objective Description form, for all characteristics for which you have adequate data.
- 13d Describe any additional characteristics that are not described, or whose description cannot be accurately conveyed in Exhibit C. Use comparative varieties as is necessary to reveal more accurately the description of characteristics that are difficult to describe, such as, plant habit, plant color, disease resistance, etc.
- 14a If "YES" is specified (seed of this variety be sold by variety name only as a class of certified seed) the applicant may NOT reverse his affirmative decision after the variety has either been sold and so labeled, his decision published, or the certificate has been issued. However, if the applicant specified "NO," he may change his choice. (See section 180.16 of the Regulations and Rules of Practice.)
- 15a See section 42 of the Plant Variety Protection Act and section 180.7 of the Regulations and Rules of Practice.

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

INSTRUCTIONS: See Reverse.

No certificate for plant variety protection may be issued unless a completed application form has been received (5 U.S.C. 553).

1a. TEMPORARY DESIGNATION OF VARIETY NK1		1b. VARIETY NAME Red Baron		FOR OFFICIAL USE ONLY PV NUMBER 8100037	
2. KIND NAME Radish		3. GENUS AND SPECIES NAME Raphanus sativus L.		FILING DATE 1/9/81	TIME 2:00 P.M.
4. FAMILY NAME (BOTANICAL) Cruciferae		5. DATE OF DETERMINATION January 1978		FEE RECEIVED \$ 500.00 \$ 250.00	DATE 1/9/81 11/9/82
6. NAME OF APPLICANT(S) Northrup King Co.		7. ADDRESS (Street and No. or R.F.D. No., City, State, and ZIP Code) 1500 Jackson St. N.E. Minneapolis, MN 55413		8. TELEPHONE AREA CODE AND NUMBER (612) 781-5305	
9. IF THE NAMED APPLICANT IS NOT A PERSON, FORM OF ORGANIZATION: (Corporation, partnership, association, etc.) Corporation			10. IF INCORPORATED, GIVE STATE AND DATE OF INCORPORATION Delaware		11. DATE OF INCORPORATION 1896
12. NAME AND MAILING ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS: Robert W. Romig, Northrup King Co., 1500 Jackson St. N.E., Minneapolis, MN 55413					

13. CHECK BOX BELOW FOR EACH ATTACHMENT SUBMITTED:

- ☒ 13A. Exhibit A, Origin and Breeding History of the Variety (See Section 52 of the Plant Variety Protection Act.)
- ☒ 13B. Exhibit B, Novelty Statement.
- ☒ 13C. Exhibit C, Objective Description of the Variety (Request form from Plant Variety Protection Office.)
- ☒ 13D. Exhibit D, Additional Description of the Variety.

14a. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? (See Section 83(a). (If "Yes," answer 14B and 14C below.) ☐ YES ☒ NO

14b. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? ☐ YES ☒ NO

14c. IF "YES," TO 14B, HOW MANY GENERATIONS OF PRODUCTION BEYOND BREEDER SEED? ☐ FOUNDATION ☐ REGISTERED ☐ CERTIFIED

15a. DID THE APPLICANT(S) FILE FOR PROTECTION OF THIS VARIETY IN OTHER COUNTRIES? ☐ YES ☒ NO (If "Yes," give name of countries and dates.)

15b. HAVE RIGHTS BEEN GRANTED THIS VARIETY IN OTHER COUNTRIES? ☐ YES ☒ NO (If "Yes," give name of countries and dates.)

16. DOES THE APPLICANT(S) AGREE TO THE PUBLICATION OF HIS/HER (THEIR) NAME(S) AND ADDRESS IN THE OFFICIAL JOURNAL? ☒ YES ☐ NO

17. The applicant(s) declare(s) that a viable sample of basic seed of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in Section 41, and is entitled to protection under the provisions of Section 42 of the Plant Variety Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

JANUARY 6, 1981
(DATE)

Robert W. Romig
(SIGNATURE OF APPLICANT)

(DATE)

(SIGNATURE OF APPLICANT)

EXHIBIT A

Origin and Breeding History of the Variety

Red Baron is a synthetic variety developed by recurrent phenotypic selection from a cross between Red Prince and Red Devil. We made the original cross in our greenhouse at Stanton, Minnesota in December of 1974 and planted the F1 seed in the field there in May of 1975. We then selected 24 bulbs from this segregating F1 population based on top size, color, shape, and disease resistance. We transplanted these into a screened enclosure and at flowering time introduced bees for random cross pollination to develop a Synthetic 1 population.

We planted this seed in the field at Stanton, Minnesota in May, 1976. At this stage, we selected 50 bulbs, again on the basis of top size, color, shape and disease resistance, for subsequent intercrossing by bees within a screened enclosure to develop a Synthetic 2 population.

Seed from the Synthetic 2 population was planted in the greenhouse at Stanton, Minnesota in January, 1977. From this planting, 42 bulbs were selected for subsequent intercrossing by bees within a screened enclosure at Stanton in the spring of 1977 to develop Synthetic 3 seed. We planted Synthetic 3 generation seed in Florida during the winter of 1977-78. From this population, we selected 22 bulbs based on their top size, color, and shape, and also for their resistance to cracking. These bulbs were subsequently transplanted in the spring of 1978 at Stanton, Minnesota inside a screened enclosure. At flowering, bees were introduced inside the enclosure for random pollination to produce Synthetic 4 seed. Ten ounces of this Synthetic 4 generation seed was planted at Yuma, Arizona in the fall of 1978 to produce breeders seed of the variety in the spring of 1979.

Red Baron has a flower color variation which fits a 1:2:1 distribution for dark pink, pink and slightly pink respectively, i.e. 16:41:24 for a χ^2 of 1.59. Presumably this characteristic is in equilibrium, although we have not verified this.

Red Baron has good uniformity and stability for bulb top-size, bulb color, and bulb shape. No unusual or describable variants characteristic of the variety, other than the above noted variability in flower color, have been observed during multiplication.

Red Baron has good stability against cracking as shown below:

Variety	Percent Cracking			Average	Variance
	Trial 1	Trial 2	Trial 3		
Red Baron	0.0	1.2	1.3	0.8	1.565
Red Prince	1.8	4.2	29.3	11.8	439.685

EXHIBIT A

Origin and Breeding History of the Variety

Red Baron is a synthetic variety developed by recurrent phenotypic selection from a cross between the Prince and Red Devil. We made the original cross in our greenhouse at Stanton, Minnesota in December 1937 and planted the F1 seed in the field there in May of 1938. We then selected 24 bulbs from this segregating F1 population based on top size, color, shape, and disease resistance. We transplanted these into a screened enclosure and at flowering time introduced bees for random cross pollination to develop a Synthetic 2 population.

We planted this seed in the field at Stanton, Minnesota in May, 1938. At this stage, we selected 20 bulbs, again on the basis of top size, color, shape and disease resistance, for a second intercrossing by bees within a screened enclosure to develop a Synthetic 3 population.

Seed from the Synthetic 3 population was planted in the greenhouse at Stanton, Minnesota in January, 1939. From this planting, 42 bulbs were selected for a second intercrossing by bees within a screened enclosure at Stanton in the spring of 1939 to develop Synthetic 4 seed. We planted Synthetic 4 seed in the field during the winter of 1939-40. From this population, we selected 22 bulbs based on their top size, color, and shape, and also for their resistance to cracking. These bulbs were subsequently transplanted in the spring of 1940 at Stanton, Minnesota inside a screened enclosure. At flowering, bees were introduced inside the enclosure for random pollination to produce Synthetic 5 seed. Ten ounces of this Synthetic 5 seed was planted at Yuma, Arizona in the fall of 1940 to produce a seedling of a variety in the spring of 1941.

Red Baron has a few color variations which first appeared in 1941. These are pink, pink and slightly pink respectively. In 1942, we observed a few more variations, namely, pink and slightly pink, and pink and slightly pink. Although we have not recorded this characteristic as an equilibrium, although we have not recorded this.

Red Baron has good uniformity and stability for bulb top size, bulb color, and bulb shape. No unusual or desirable variants characteristic of the variety, other than the above noted variations in flower color, have been observed during multiplication.

Red Baron has good stability against cracking as shown below:

Variance	Percent Cracking			
	Trial 1	Trial 2	Trial 3	Average
Red Baron	0.0	1.2	1.3	0.8
Red Devil	1.2	1.2	2.5	1.6

JAN 9 1981
pkw



NORTHROP KING CO.
P.O. BOX 959, MINNEAPOLIS, MN 55440

EXHIBIT B (amended)
Data Indicative of Novelty

Red Baron is most similar to Red Prince but differs from Red Prince in that it has a slightly darker-red bulb. Red Baron is also resistant to Rhizoctonia sp. whereas Red Prince is moderately susceptible.

BOX COTTON TIER

EXHIBIT 2 (continued)
List Indicative of Novelty

2.4 Hylon is a seed similar to that of Hylon but differs from Hylon in that it has a slightly different shape. Hylon is also resistant to rot and insects. Hylon is moderately successful.

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MAR 16 1981
U.S. DEPARTMENT
OF AGRICULTURE
AMS, LFGS DIV.
RVPD

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EXHIBIT B**Data Indicative of Novelty**

Red Baron is most similar to Red Prince but differs from Red Prince in that it has a slightly darker red bulb and better resistance to Rhizoctonia sp. The disease comparison is shown below:

<u>Variety</u>	<u>Percent Rhizoctonia</u>			<u>Average</u>
	<u>Trial 1</u>	<u>Trial 2</u>	<u>Trial 3</u>	
Red Baron	5.6	4.8	3.0	4.5
Red Prince	22.8	26.7	21.6	23.7

EXHIBIT B
Data Indicative of Novelty

Red Baron is most similar to Red Prince but differs from Red Prince in that it has a slightly darker red bulb and better resistance to Rhizoctonia sp. The disease comparison is shown below:

Variety	Percent Rhizoctonia		
	Trial 1	Trial 2	Trial 3
Red Baron	2.0	1.8	3.0
Red Prince	3.8	26.7	21.6
			22.2

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EXHIBIT D

Additional Description of the Variety

The first true leaf of Red Baron is non-pinnate. Pinnae appear on the second true leaf. Early leaves are oval to long-oval in shape. The leaf margin is entire.

EXHIBIT D

Additional Description of the Variety

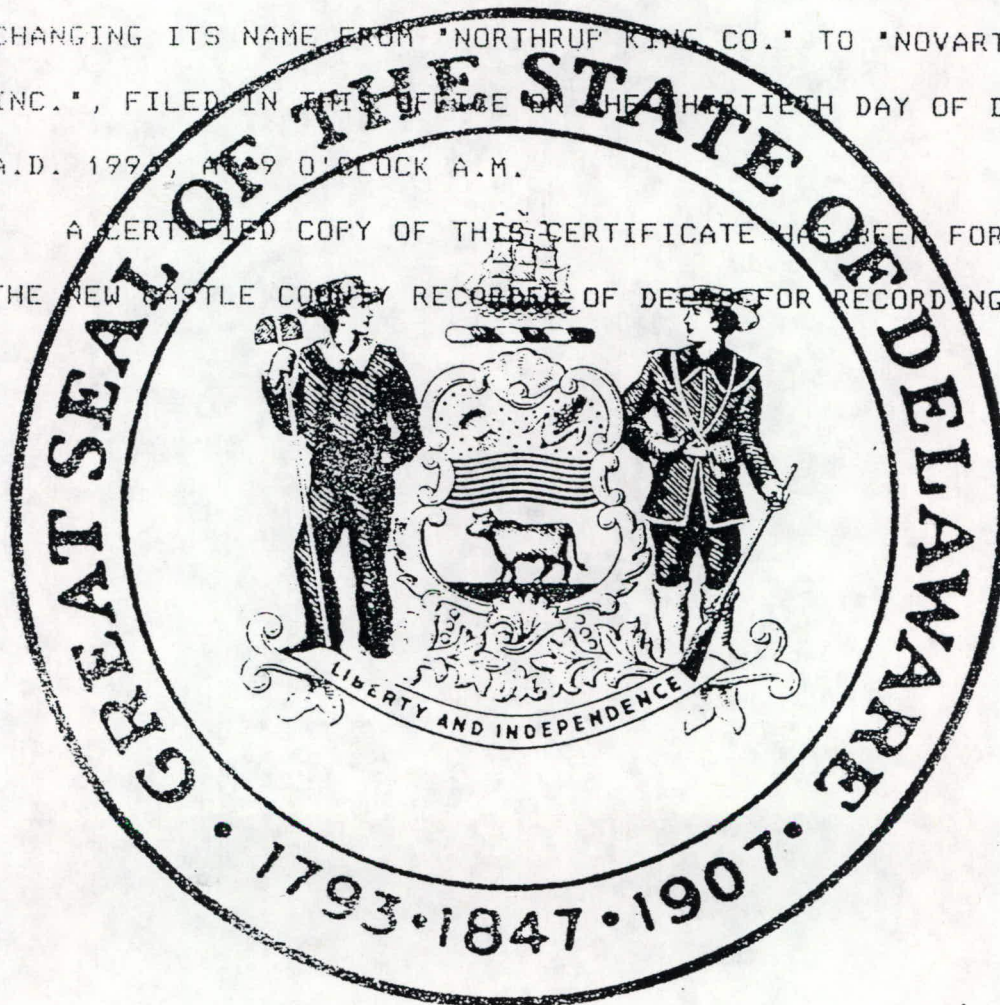
The first true leaf on Red Baron is non-pinnate. Pinnate appear on the second true leaf. Early leaves are oval to long-oval in shape. The leaf margin is entire.

JAN 9 1981
yrtw

Office of the Secretary of State

I, EDWARD J. FREEL, SECRETARY OF STATE OF THE STATE OF DELAWARE, DO HEREBY CERTIFY THE ATTACHED IS A TRUE AND CORRECT COPY OF THE CERTIFICATE OF AMENDMENT OF "NORTHROP KING CO.", CHANGING ITS NAME FROM "NORTHROP KING CO." TO "NOVARTIS SEEDS, INC.", FILED IN THIS OFFICE ON THE THIRTIETH DAY OF DECEMBER, A.D. 1996, AT 9 O'CLOCK A.M.

A CERTIFIED COPY OF THIS CERTIFICATE HAS BEEN FORWARDED TO THE NEW CASTLE COUNTY RECORDER OF DEEDS FOR RECORDING.



Edward J. Freel

Edward J. Freel, Secretary of State

0829320 8100

960389892

AUTHENTICATION:

8267947

DATE:

12-31-96

CERTIFICATE OF AMENDMENT OF CERTIFICATE OF INCORPORATION
OF
NORTHROP KING CO.

It is certified that:

1. The name of the corporation (hereinafter called the "Corporation") is Northrup King Co.

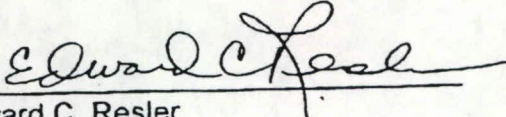
2. The Certificate of Incorporation of the Corporation is hereby amended by striking out Section 1 thereof and by substituting in lieu of said Section the following new Section.

1. The name of the Corporation is Novartis Seeds, Inc.

3. The amendment of the certificate of incorporation herein certified has been duly adopted and written consent has been given in accordance with the provisions of Sections 228 and 242 of the General Corporation Law of the State of Delaware.

4. The effective date of the amendment herein certified shall be January 1, 1997.

Signed on December 27, 1996.


Edward C. Resler
Vice President & Secretary



U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
LIVESTOCK, POULTRY, GRAIN & SEED DIVISION
BELTSVILLE, MARYLAND 20705

EXHIBIT C
(Radish)

OBJECTIVE DESCRIPTION OF VARIETY
RADISH (Raphanus sativus L.)

NAME OF APPLICANT(S) Northrup King Co.	VARIETY NAME OR TEMPORARY DESIGNATION Red Baron.
ADDRESS (Street and No. or R.F.D. No., City, State, and ZIP Code) 1500 Jackson St. N.E. Minneapolis, MN 55413	FOR OFFICIAL USE ONLY PVPO NUMBER 8100037

Place numbers in the boxes (e.g.) for the characters that best describe this variety.

1. TYPE:

<input type="text" value="1"/>	1 = ANNUAL	2 = BIENNIAL	<input type="text" value="2"/> <input type="text" value="5"/>	DAYS FROM SOWING TO MARKET MATURITY
NO. DAYS	<input type="text" value="2"/> EARLIER	THAN	<input type="text" value="1"/>	1 = CHERRY BELLE
	<input type="text" value="2"/> LATER		<input type="text" value="1"/>	2 = CRIMSON GIANT
				3 = SPARKLER
				4 = CHINESE WHITE

2. TOP (leaf at market maturity):

<input type="text" value="3"/>	1 = SHORT (< 12 cm)	2 = MEDIUM (12 - 15 cm)	3 = LARGE (> 15 cm)
<input type="text" value="0"/> <input type="text" value="5"/>	NO. OF TRUE LEAVES		
<input type="text" value="4"/>	LEAF LENGTH/WIDTH RATIO: 1 = 1.5:1 2 = 2:1 3 = 2.5:1 4 = 3:1		
<input type="text" value="3"/>	NO. OF PAIRS OF LATERAL PINNAE	<input type="text" value="2"/>	1 = GLABROUS 2 = HIRSUTE
<input type="text" value="3"/>	1 = LIGHT GREEN (GIANT WHITE GLOBE) 2 = MEDIUM GREEN (CHAMPION)		
	3 = DARK GREEN (EARLY SCARLET GLOBE MED. TOP)		

3. STEM (at flowering):

<input type="text" value="9"/> <input type="text" value="6"/>	HEIGHT cm:
<input type="text" value="1"/> <input type="text" value="7"/>	NO. OF INTERNODES

4. INFLORESCENCE:

<input type="text" value="3"/> <input type="text" value="4"/>	NO. OF FLOWERS PER RACEME	<input type="text" value="2"/> <input type="text" value="1"/>	mm MEDIAN DIAMETER OF FLOWERS
<input type="text" value="5"/>	FLOWER COLOR: 1 = WHITE 2 = PINK 3 = PURPLE 4 = YELLOW	5 = OTHER (Specify) Dark pink, pink, slightly pink	
<input type="text" value="2"/>	VEINS: 1 = NONCONTRASTING 2 = DARK VEINED	1:2:1	

5. FRUIT:

<input type="text" value="4"/> <input type="text" value="6"/>	mm LENGTH OF SILIQUE
<input type="text" value="1"/> <input type="text" value="0"/>	mm MAXIMUM DIAMETER
<input type="text" value="7"/>	MEDIAN NO. OF SEEDS PER SILIQUE
<input type="text" value="4"/>	SEED COLOR: 1 = ORANGE 2 = RED 3 = RED-BROWN 4 = BROWN
<input type="text" value="1"/>	BEAK: 1 = SHORTER 2 = EQUAL 3 = LONGER THAN POD
<input type="text" value="0"/> <input type="text" value="8"/>	GRAMS PER 1,000 SEEDS